

Non-Technical Abstract

It is estimated that prostate cancer will be the leading male cancer diagnosis and the second most common cause of male cancer death in the United States in 2000. Prostate cancer detected in early stages can be treated successfully by surgery or radiation. However, 10-15% of subjects will have metastatic cancer (tumors that have spread to areas outside the prostate) at the time of diagnosis. Of subjects undergoing removal of the prostate, approximately 20-30% will still have residual cancer cells remaining at the time the prostate is removed. Thus, a significant number of patients are at risk for a local re-growth of prostate cancer. In other patients, metastatic prostate cancer may subsequently develop after some form of initial surgery or radiation. The most common locations for the spread of prostate cancer are the bones and lymph nodes. Removing or blocking the male hormone testosterone can slow the growth of prostate cancer. But no effective therapy is available for these groups of patients and the need for new therapeutic approaches to treat advanced prostate cancer is clear.

This trial uses a virus based on a human-type adenovirus to specifically target and kill prostate cancer, including cancer that has spread to the bone and lymph nodes. The Ad-mOC-E1a virus (OCaP1) has been altered to restrict the spread of the virus to prostate cancer tumors. Upon injection of Ad-mOC-E1a directly into the prostate or tumors in the bones or lymph nodes, the virus will spread to and kill the prostate cancer cells while leaving the normal tissues unharmed. The ability to specifically target prostate cancer cells comes from the placement of a control element of DNA (the osteocalcin promoter) that functions in cells that have the ability to deposit calcium (bone, prostate cancer). The osteocalcin promoter is primarily active during development, when bones are growing. Prostate cancer cells have properties similar to growing bones, which makes them particularly sensitive to the osteocalcin promoter. Therefore, this study hopes to demonstrate the ability of Ad-mOC-E1a to safely target and kill prostate cancer cells by using a prostate cancer-specific control element (osteocalcin promoter) to restrict the spread of the virus to prostate cancer tumors.

This study will investigate Ad-mOC-E1a for the treatment of recurrent and metastatic prostate cancer. A single tumor will be directly injected with one of four doses of Ad-mOC-E1a. This will be followed by an escalation in the number of tumors injected (from 2 to 5) in a different group of subjects.

The primary objective of this study is to demonstrate that a single direct injection of Ad-mOC-E1a into one to five tumors is safe. Additionally, biologic and radiologic evaluations will be performed to evaluate the feasibility and potential effectiveness of this approach.